Who is involved in Power Management Controls?

*The "***Institutional Review"** *for the Power Management Controls Project*

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The purpose of this Institutional Review is to identify those organizations that need to play an active role in the project—providing information, reviewing plans and results, potentially altering standards or specifications, or potentially altering product designs. These may include standards organizations (international or national), manufacturers, government agencies, non-profit organizations, and consortia (usually organized around a topic or protocol).

We first discuss the methods for reviewing and identifying relevant institutions. This is followed by a discussion international standards and standards organizations. Then we review other key institutions and their role/relevance. Finally, we discuss the implications of these results for the project. In addition to identifying organizations whose participation is critical, we also aim to identify individuals and organizations who don't meet this criteria but may wish to be involved or just informed of progress. This review also helps to identify key sources of information. We have reached the point where additional research is unlikely to uncover any additional organizations so that this phase of the project will be done after incorporating feedback from the PAC and others.

1. How We Searched For Key Organizations

The information presented here was found through a variety of means, which we used in combination with each other.

- We were able to bring considerable knowledge and personal contacts from our past work in office equipment energy use, as well as accumulating references in the 2 years since we proposed the project. This includes knowledge of the literature on office equipment energy use
- We obtained references from members of the Professional Advisory Committee (PAC) and others during conversations specifically about the project.
- We searched the web extensively, reviewing many sites and pages for potential connection to this project, often scanning through lengthy documents. The sites searched were gleaned from all of our other methods (past knowledge, personal contact, etc.) as well as reviewing the sites of major manufacturers, and utilizing search engines.
- We gathered information from phone and email conversations with people in the standards community, to be sure that we properly understood its structure as well as found all relevant committees and standards.

While we cannot be certain that all important organizations or standards have been noted, one way of assessing coverage is the degree to which each new contact refers us only to individuals, organizations, or documents that we already know about.

There are literally hundreds of committees under the auspices of the ISO, the IEC, and their JTC1. With the text of standards not freely available, it can be difficult to be certain that an idea is not present in any standard. The following committees were selected based on their title, scope, projects, subcommittee and working group titles, and titles of standards for which they are

responsible, supplemented by querying people with long experience in a particular standards area. Understanding the scope of IEC Technical Committees is easier than for ISO as for each one there is a Strategic Policy Statement available on the web. We generally avoided committees with safety as part of their name, since safety is a topic that we are specifically not addressing. We also avoided committees with medical equipment as their primary topic.

For non-standards organizations, the task was considerably easier. Our past work in office equipment energy use brought us into contact with most of the relevant organizations and protocols, and the goals, methods, and key documents are generally readily available.

2. Relevant Institutions

Existing Standards / Standards Committees

The two international standards organizations of interest to this project are the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). The ISO and IEC have a joint body—Joint Technical Committee 1 (JTC1) on Information Technology. Each of these entities has an extensive tree of technical committees, subcommittees, and working groups. In some cases, there are joint working groups created to coordinate topics that span more than one committee, along with extensive networks of individual liaisons between committees.

The issues addressed in this project do not fall cleanly into the existing work areas of any single existing standards committee. There are perhaps a dozen committees that have work scopes that are related enough to the project that they should be at least informed about the project in case any overlap exists or if they are interested to follow the project's evolution. There are a considerably smaller number of committees that are clearly relevant. An increasing number of standards are defined by industry consortia rather than through traditional standards organizations. Some of these are existing standards, some are presently under development or revision, and some will be developed only in the future.

The existing relevant standards and committees fall into four categories: graphical symbols, indicators, energy savings, and terminology.

Graphical Symbols

The international standards for graphical symbols exist in several documents. One key existing standard is IEC 60417: Graphical Symbols For Use On Equipment, originally established in 1973 and updated frequently, including in 1997[1]. This standard defines over 600 symbols, the great majority of which have nothing to do with energy use or power management. A modest number have something to do with office equipment and consumer electronics, such as those for audio or video controls.

IEC 60417 is the responsibility of TC 3/SC 3C—Graphical Symbols For Use On Equipment (part of TC 3: Documentation and Graphical Symbols). SC 3C covers "Basic design rules for graphical symbols" and "The design of graphical symbols for particular applications." IEC 60417 is being converted from publication in traditional form to a database updated on a "continuous basis".

Another collection of graphical symbols is ISO 7000: Graphical Symbols For Use On Equipment. This covers a similarly wide range of symbols as IEC 60417. From the perspective of

[1] The version of this document that we have (the 1997 one) is dated 1998. On October 18, 2000, a new version was issued, but we do not believe that any of the symbols of interest to this project were affected

office equipment and power management, it is not apparent why symbols reside in one document or the other. A few key symbols reside in ISO 7000, as well as many related to other aspects of office equipment such as symbols used on copiers. Responsibility for this document lies with TC 145: Graphical Symbols, and specifically TC 145/SC 3 Graphical Symbols For Use On Equipment.

A new document, now under preparation, collects the symbols relevant to office equipment from IEC 60417 and ISO 7000 into one place; this is ISO/IEC 13251: Information Technology — Collective Standard — Graphical Symbols For Office Equipment. As this is a joint document, it is being prepared by a JTC1 committee, SC 35: User Interfaces (WG 3: Graphical symbols). There is also a WG 2: User Interface Interaction.

Other documents cover guidance on creating graphical symbols, such as IEC 80416: Basic Principles For Graphical Symbols For Use On Equipment. This is still in development, and will replace ISO 4196 (on arrows) and IEC 60416. Another document of this type is ISO 3461: General Principles For The Creation Of Graphical Symbols. These guidance documents do not have an immediate impact on this project, but would need to be reviewed prior to formally suggesting amendments or additions to the symbol standards documents.

With three different committees working in essentially the same territory, coordination is vital, and so there is a Joint Working Group (JWG 11) combining members of IEC/SC 3C and ISO/TC 145 (it isn't clear if JTC 1/SC 35 is also part of JWG 11). The JWG 11 Charter includes "To revise IEC 60416 (ISO 3461-1) and ISO 4196, and develop additional parts, in order to publish a joint ISO/IEC standard comprising four parts: Part 1: Creation of graphical symbols; Part 2: Form and use of arrows; Part 3: Guidelines for the application of graphical symbols; Part 4: Supplementary principles for the creation of graphical symbols for use on screens and displays (icons)." Finally, there is a "SC 3C/WG 1: Revision of IEC 417 Structure".

IEC 11581 Icon Symbols and Functions is for those symbols used on displays. None of the existing symbols are specific to power status or management, though some general ones such as a clock symbol could be useful.

The actual relevant symbols from these documents will be reviewed elsewhere.

Energy Consumption

IEC TC 74: Safety and Energy Efficiency of IT Equipment is primarily concerned with safety issues. Energy efficiency is at present concentrated on power levels, and located in TC 74/WG 9: Harmonic Limits and Energy Efficiency of IT Equipment has the task "To prepare a standard for harmonic current limits for IT equipment … and to develop a standard for methods of measurement of energy efficiency including power management."

TC 74/WG 9 has been trying to create at a single set of terms for power management modes, to be used in specifying test procedures for measuring office equipment energy use. While these are intended for technical use (not final user use), we have seen in the past how technical terms used in product development often end up in user interfaces. WG 9 has been confronted with diverse and conflicting sets of terms from different devices and sources, and found trying to harmonize them difficult. Translation to other languages has also been challenging, with few of the terms in the standard dictionary of technical terms used for such purposes. The process is ongoing.

The convergence of information technology and audio/video equipment has led to suggestions of a joint working group or merging of TC 74 with a similar committee — TC 92: Safety of Audio/Video Equipment (though TC 92's title and charter do not include energy efficiency).

Indicators

Some standards refer to the use of colors. For symbols used on equipment, use of color is discouraged, though icons for displays are typically drawn with multiple colors. The only discussion of indicator lights for power status in standards state that red is not to be used to indicate the a device is 'on', as red is reserved for warnings and errors. Yellow is sometimes used to indicate caution, but to the extent that it is seen as meaning 'slow', this may not conflict with its use as a color indicating 'sleep'.

The ISO committee TC 159/SC 4/WG 3: Ergonomics of Human-system Interaction - Control, Workplace and Environmental Requirements may be relevant. This committee is primarily concerned with ergonomic issues. Power management has apparently not been part of their work program to date, but this may be an appropriate place to at least discuss how indicator standards might be codified, and perhaps added to the committee's agenda.

Terminology

The area of 'terminology' is generally used in standards circles to include only terms used for technical purposes, not for terms used by ordinary people. As such, the topic is only marginally related to this project, though it may be worth assessing in the service of bringing user terms into some consistency with expert terminology over the long run. The relevant committees responsible for such issues are ISO TC 37: Terminology (principles and coordination), and IEC TC 1: Terminology. The latter includes in its charter to "determine the equivalence of the terms used in the different languages"—the translation of technical terms to other languages may be relevant to the translation of terms for general use.

Other Committees

A number of committees within the ISO/IEC/JTC1 structure have enough potential relevance that they should be notified of this process, and offered the opportunity of ongoing dialogue. These include:

- IEC / SC 23B/PT 62094: Indicators units for household and similar fixed electrical installations. Addresses switches for AC power[2].
- IEC / SC 23J: Switches for Appliances. Covers safety and technical issues only.
- IEC / TC 59: Performance of Household Electrical Appliances. The committee's focus on hardware / technical performance is narrow, but energy use is within scope.
- IEC / TC 72: Automatic Controls for Household Use. Oriented towards hardware.
- IEC / TC 92: Safety of Audio, Video, and Similar Electronic Equipment. Principally concerned with safety.
- IEC / TC 100: Audio, Video, and Multimedia Systems and Equipment. Primarily concerned with hardware characteristics or performance assessment.
- JTC1 / SC25: Interconnection of Information Technology Equipment. WG 4 is concerned with "Standardization of interfaces, protocols and associated interconnecting media for information technology equipment…". WG 1 is concerned with 'home automation', principally technical compatibility, not user interfaces.

[2] A note for the entire SC 23 includes a note: "2) For the terms "ordinary persons", "instructed persons" and "skilled persons", see Publication 364-3, Sub-clause 322.1." This terminology may be useful.

Other International Standards Organizations

The European standards organizations (e.g. CEN and CENELEC; www.cenorm.be and www.cenelec.be), which have the ability to compel adoption of standards by the member countries (unusual in the standards world). At this time we do not expect to contact them directly.

The International Telecommunications Union (ITU) is one of the three major international standards organizations (along with ISO and IEC). ITU focuses on technical specifications that allow telecom equipment to interconnect. We don't know of any ITU standards relevant to this project.

The International Committee on Illumination (CIE) is not strictly relevant to this project, but it may be that future standards for the electronic control of lighting would benefit from common user interfaces to that used for electronic devices. We understand that at present, there are no such standards for lighting control device user interfaces, so it appears that that the lighting community could learn from the results of this project.

U.S. Standards Organizations

The international standards system works by having at each national level, structures that parallel those of the international level. The international committees are made up of delegates from the corresponding national committee to represent the interests and concerns of the national committees, and carry information and conclusions back to them. With the international committees having from one to several dozen members, each country is represented on only a portion of committees. In these cases, the superior body for the country handles the topic area.

The American National Standards Institute (ANSI) coordinates international standards activities for the U.S. The corresponding body to the IEC in the U.S. is the U.S. National Committee of IEC, and the committee for JTC1 is the JTC1 Technical Advisory Group (TAG).

An international committee not mentioned above is JTC1/SC 28: Office Equipment. Despite its title, SC 28's scope is at present limited to imaging and image quality, and does not extend to office equipment such as computers or to power or user interface issues, so is not relevant to this project. The U.S. TAG for JTC1/SC 28 is committee W2: Office Equipment of the National Committee on Information Technology Standards (NCITS).

The U.S. is neither a participating nor an observing member of this JTC1/SC 35, however it is the secretary. Canada is the chair, and due to proximity, it may be opportune to contact them to see if they would bring this project to the SC. The U.S. JTC1 liaison should probably indicate to us how best to approach SC 35. The U.S. counterpart to the IEC is the United States National Committee of IEC, though the U.S. is not a member of IEC TC 3.

While not a U.S. counterpart to any of our international committees of concern, the American Society for Testing and Materials (ASTM) defines several test procedures for office equipment, which include definitions of terms. While these terms are intended only for technical use, they have often ended up being used in user interfaces, particularly for copiers. At present, the test procedures cover copiers, printers, and fax machines.

Underwriters Laboratories (UL) is primarily concerned with safety issues. Because extra electricity use is not a safety problem, power management is not of interest to UL. However, some characteristics of on/off switches or indicators may be part of their tests, so contacting UL may be prudent to assure that we don't unintentionally interfere with any safety standard or concern.

The Institute of Electrical and Electronics Engineers (IEEE) created (in 1998) the IEEE-SA (Standards Association) to take over the standards activities of IEEE. We don't believe that IEEE has any standards relevant to this project. The U.S. National Institute for Standards and

Technology (NIST, a federal agency) has no apparent active work areas that overlap with this project.

Labeling Programs

The ENERGY STAR program is principally sponsored by the U.S. Environmental Protection Agency (EPA), though the U.S. Department of Energy is an official co-sponsor. ENERGY STAR relates to this project in several ways.

- It provides a forum for manufacturers to meet and come to agreement on common ways to provide energy and economic savings to customers.
- It provides a mechanism for international coordination.
- It defines terms in the various Memoranda of Understanding (MOUs).
- It defines basic concepts such as operating modes.

Current MOUs cover the major types of office equipment — PCs, monitors, printers, fax machines, copiers, multi-function devices (MFDs), scanners — as well as consumer electronics — TVs, VCRs, audio equipment, and (soon) set-top boxes. Controlling devices for office equipment are also included (these are add-on hardware devices that can turn off power to office equipment based on occupancy or other activity).

The ENERGY STAR criteria are also becoming de facto international standards (albeit voluntary in all but a few circumstances) as other countries adopt its terms and criteria.

The Swedish Confederation of Professional Employees (TCO) has long been involved in office equipment energy issues. The energy criteria parallel those of ENERGY STAR, though they are often more stringent. The TCO label also requires meeting a variety of environmental and ergonomic criteria.

An increasing number of countries have or are in the process of adopting the ENERGY STAR criteria for their own domestic labeling program. These include Korea, Switzerland, and Australia. In general, the terms used, power levels, and other values are the same as for ENERGY STAR.

Trade Associations

The Information Technology Industry Council (ITI) is a membership organization representing about 30 major electronics manufacturers. ITI's "Considering a U.S. National Standards Strategy: Building on A Framework for Success" emphasizes ITI's view that the U.S. method of standards development is successful and should be maintained. This is a system that is led by the private sector, but with a strong working relationship between the public and private sectors. ITI also is concerned with removing trade barriers that could arise through standards efforts. ITI is a strong advocate of voluntary, market-sensitive energy efficiency programs that are non-discriminatory and promote flexibility and innovation. ITI's participation could help provide credibility, outreach, and coordination for the project. ITI also staffs the U.S. Technical Advisory Group for JTC1.

The International Information Industry Congress (IIIC) represents trade associations from Australia, Brazil, Italy, United Kingdom, Canada, New Zealand, the U.S., Japan, France, and Germany, as well as Europe as a whole. Its role can be expected to parallel that of ITI. IIIC's functions are hosted on a rotating basis by the member associations (of which ITI is one).

EICTA (the European Information and Communications Technology Industry Association) is the European counterpart to ITI. It was formed by the combination of two previous organizations, ECTEL and EUROBIT. It is likely that the point of view of EICTA and

ITI towards this project would be similar. EICTA has an environmental policy committee which is a logical primary point of contact. This should facilitate contact with large European IT companies that lack a significant U.S. presence.

Japan Business Machine Makers Association (JBMA) lists IEC TC74 (and JTC1/SC 28) on its web page, though the information about these in English does not clarify the nature of their work on those committees. The JBMA is apparently quite interested and active in both of these committees' work.

Some U.S. trade associations that plausibly would have an interest in this project have no current activities that indicate this, though notifying them of the project would be prudent. These include AHAM (Association of Home Appliance Manufacturers, www.aham.org), and NEMA (National Electrical Manufacturers Association, www.nema.org).

Manufacturers

Manufacturers of office equipment (hardware and software) use terms and symbols (elements) on their products and in documentation. Key elements include terms for power modes and timers; symbols for On, Off, On/Off switches; and indicators for power and for low-power modes.

Most energy use and savings in office equipment is derived from PCs and monitors. Since the power state of most of these is controlled by Microsoft software and Intel processors, the actions of these two companies require special review. These two companies often pursue technology initiatives that are accomplished through the combined efforts of them and other hardware and software manufacturers.

The Instantly Available PC (IAPC) initiative (Intel) defines desired user experiences related to power management, names and behaviors of button on PC hardware, descriptions of indicator lights, and methods of waking a sleeping PC. OnNow (Microsoft) defines characteristics of user experience. The Easy PC Initiative (Intel, Microsoft) defines terms for power mode transitions. The particular processor families and operating systems embody terms and symbols. The periodic PC Design Guides (Intel, Microsoft) also incorporate some of the above initiatives and technologies. Perhaps most important (and related to the other initiatives), ACPI (the Advanced Configuration and Power Interface) defines power modes, transitions, buttons, indicators, and overall user experience.

The ACPI specification is the most concrete of all of these initiatives, and likely the basis for the same concepts (e.g. buttons and terms) used in the others. In addition, it is the most specific with regard to the items that must end up in user interfaces, such as buttons and indicators (as opposed to technical terms which don't have to be the same terms used in user interfaces).

In other platforms, the definition and use of the power management terms are generally within a single company. Examples of these are power management user interfaces created by Apple, Sun, and Unisys.

A number of 'third party' companies have and do produce software for particular platforms that provides power management capability beyond that provided natively by the operating system. These may allow for more fine-tuned control, provide recording capability, incorporate security, or include other features. They define power states, though usually follow the conventions of the base system.

Other Technology Initiatives and Protocols

The Video Electronics Standards Association (VESA) defines standards that allow computers, video cards, and displays from diverse manufacturers to work well together. The Display Power Management Signaling (DPMS) standard defines several power states, which due to the nature of monitors, are readily apparent to the user (in the display going blank, the indicator light (usually) changing color, and in the time it takes a sleeping monitor to fully recover on reawakening). These terms are often used in control panels for power managing monitors. Other standards, such as the Plug and Display standard, refers only to internal power states. The indicator colors used on monitors are so consistent from brand to brand that it was a surprise to hear from VESA that these are not due to VESA standards.

The Ease Of Use (EOU) Roundtable brings together several dozen companies interested in improving the overall user experience of setting up and using personal computers and related hardware. Power management emerged as a key ease-of-use issue about a year ago, and has been a topic of ongoing work within the roundtable. The roundtable can be an important source of outreach, communication, and feedback for the project.

Many recent communications protocols have been developed in recent years, particularly for use in the home. Some of these make no reference to power states; this does not mean that devices using the protocol can't have multiple power states, but rather than the protocol doesn't respond to or adapt to them (devices either can communicate or are seen as off). Other protocols incorporate low-power states and so have terms for referring to these, but in all cases we have found to date, it seems that the terms are only for internal use, not for user interfaces. Examples of these are HAVi (Home Audio/Video Interface) and Bluetooth. HAVi embodies several concepts that may be useful. A "device" is essentially a separate box. A "controller" is a device that controls other devices.

Other power sources of internal power management terms are "embedded" operating systems used in small devices. We have not looked closely at any of these to date. It may be more likely that user interface terms would surface in such devices in future than at present. Personal Digital Assistants (PDAs) and telephone-based devices may at present, and certainly in future, support multiple power states. These are not conventionally in the 'office equipment' category, but in the long-run purview of this standard.

Another potential source of user interface elements is systems designed for the remote control of devices. Some of these originate in industrial or large commercial building controls; others are designed for home automation; and still others are intended to span all of this. At present we don't think that any of these have enough final users to be critical to this project, but gathering data for them should be part of our research effort. An example of one of these systems is the OpenPLANET remote control/monitoring system developed by Shikoku Electric Power.

Standby Power / Leaking Electricity

The effort to reduce the energy used by electronic devices when they are performing no central function and/or nominally off intersects with this project in several ways, but particularly with respect to terminology. This effort is not geared towards engaging the user, but it is likely that some common ground will emerge between the two efforts.

3. Standards Processes and Procedures

It is important to understand the goals of standards processes, and the procedures and protocols used to enact them. An ANSI document on a National Standards Strategy for the U.S.

has a list of principles which are key to good standards which include "consensus ... open ... [have] balance ... transparent ... due process ... [and the process is] flexible ... timely ... coherent". "Successful standards" are "relevant ... responsive ... performance-based". These all seem apt to this project.

A standard is considered *de jure* if it is declared by a standards body and *de facto* if it is embraced by the relevant industries in actual use. A standard can be one, the other, or both. We are expecting to aim for both. A typical standards creation process takes 3-4 years.

The usual procedure is for ISO to create a standard, then for individual countries to adopt it. For long-standing national standards that merit codification of international standards, a 'fast track' process exists that quickly leads to a simple up/down vote. In general, for a committee to begin a work project, at least five countries must be interested.

Traditionally, the working documents of a technical committee (a "committee draft" — CD) are confidential, so these are password protected on the IEC/ISO/JTC1 web sites. This is reinforced by standards organizations relying on the sale of standards as an important source of revenue. However, there is a trend towards less concern for confidentiality, particularly for those standards more closely aligned with information technology. As this project is based on openness, taking it into a confidential process at a later date would be problematic.

It is possible to approach a committee informally through the chair or a member country (the U.S. representative is usually an obvious choice in this case). Formal requests should be routed through the corresponding body in the member country. The support of the national committee is generally required to bring the topic to the international committee. In the U.S. case these committees are supervised by ANSI; the appropriate committee would need to officially recommend the project to ISO for consideration, so that ANSI-recognized committee would be the earlier point of contact. For international committees without the U.S. as a participating (or observing) member, it might be necessary to work through another country, or through the corresponding committee for the larger body that the committee in question is part of.

4. What We Found In This Review

The institutions that are truly active in shaping power management user interfaces are those standards committees that define graphical symbols, and manufacturers that put terms, symbols, and indicators in their products. These will be critical in moving this project forward, as will the support and participation of selected trade associations and labeling programs.

We have not uncovered any national standards or priorities that would interfere with this project—those national or regional distinctions that do exist apply to safety issues, and not user interface elements. There is activity at the international level to harmonize technical power management terms—and an increasing array of protocols that define power management states—but none of these impede our standardizing terms used in user interfaces.

Many organizations which might be expected to have a hand in this project are in practice only connected through more technical issues. This is actually good news, as it keeps the number of organizations that need to be coordinated to a manageable number. The pool of organizations would have been much larger if we were attempting to harmonize technical terminology for power management; this is a desirable goal but well beyond our project's scope. We will necessarily record and report some of the existing terminology schemes (possibly aiding standardization), but not attempt to change them as part of this project.

For existing international standards, the principal ones for this project are those addressing graphical symbols (for use on equipment). These are updated frequently, so while the

process of amending them may be long, it seems feasible if sufficient justification can be presented.

In the final stages of gathering information for this Institutional Review, we came to a point of diminishing returns, where increasingly all references to promising additional organizations or documents were to ones we were already familiar with. This circularity leads us to believe that further work would not identify any other significant institutions. We will continue to stay attuned to this in case any new organizations arise, but our coverage (after review by the PAC and interested others) is quite sufficient, and this part of the project is completed.

5. Implications for this Project

An operating assumption of this project is that the project results will be strictly voluntary, probably codified as some form of standard. Voluntary standards are more the norm and have a number of significant advantages over mandatory ones. This is particularly true for user interface standards for which compliance can be highly subject to interpretation and nuance. Additionally, some innovation will require deviating from the standard, and/or taking it to areas not anticipated by it.

An important question for the project is which route(s), institutionally and procedurally, should be considered for the project. The project result (standard) will need periodic revisiting and modification, and so needs some institutional structure for that to take place within. "Depositing" the result with a standards institution would also provide more credibility. One possible route is creating a new ISO/IEC standard, altering one or more existing ones (this seems required for graphical symbols), or both. Another is to have it sponsored by some industry consortium, though which one might be most appropriate is not clear. Regardless, LBNL will continue to do the day-to-day work to keep the process moving forward (as long as our funding permits). If a non-ISO/IEC route were to be taken, there would need to be some clear plan for maintaining and amending the standard after this project ends.

Table 1. ISO/IEC/JTC1 document types.

Standard	A mature agreement that has gained the consensus of participating countries / organizations. **Possible.**
Technical Specification	A standard still 'in process', but still meriting some level of recognition. **Possible.**
Technical Report	Information about a topic that doesn't focus on a particular standard. **Not appropriate.**
Industry Technical Agreement (ITA)	Created in 1997, ITAs can be implemented more quickly than traditional standards. ITAs are created outside the traditional IEC structure, typically by a consortium of companies. ITAs can be created in a timeline of months. This seems to be for specifications that require such quick timing, which this project does not. **Possible, but unlikely.**
Guide	These give advice but are not strictly defining standards. **Not appropriate.**
Technology Trend Assessment	A discussion of a topic that may, at a later date, evolve into a standard. This project seems beyond this stage. **Not appropriate.**

source: http://www.iec.ch/gnote3-e.htm

Not all products of the standards creation process are of a similar form. The types of documents that are created changes over time. Table 1 lists the primary document types in existence today, with an assessment of the relevance of the publication type to this project. The results of this project may find themselves being embodied in several of these. There are two additional document types that we are still evaluating: the Publicly Available Specification (PAS) and Recommended Practice.

The critical work of the project in the short run will be with manufacturers, to identify all the concerns that they bring to such design decisions, and in helping to refine an ultimate standard. Outreach through existing organizations (e.g. through their newsletters) will be increasingly important avenue for such contact.

For standards organizations, we need to contact the committees with standards that we may suggest amending (symbols) and consult with various of the committees to gather opinions and options for the ultimate form (document type and sponsoring institution) of the other portions of the recommended standard. Because of the way topics are divided among standards, user interface elements span several different standards areas. Thus, the ultimate user interface standard that emerges from this project—while perhaps a unified concept in itself—will need to be parceled out to a variety of entities and document forms.

Ultimately, this project will be successful if the ideas and principles it results in become embodied in billions of future office equipment and other electronic products used by consumers and workers everywhere, and accomplishes saving significant energy over the status quo. The documents and standards in between may be necessary, but they are only means to this ultimate end.